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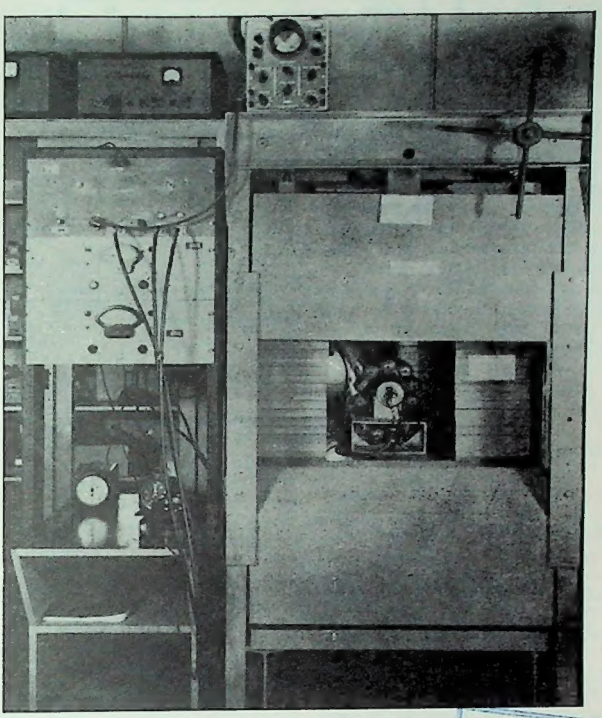

The complete apparatus, consisting of the iron shield (with the door open), the counter bundle in place, and the associated electronic apparatus. The shield, which protects the equipment from radiation disturbances from all directions, is made up of eight-inch iron plate and weighs some six tons.

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Carbon-14 Dating

DOES RECENT RESEARCH PROVE EVOLUTION?

CASE FOR COMPLETE ADULT CREATION

GOLDSCHMIDT'S REFUTATION OF NEO-DARWINISM

. . . Etc., etc.

Volume 2 - No. 2(6) - June 1964 - 30¢

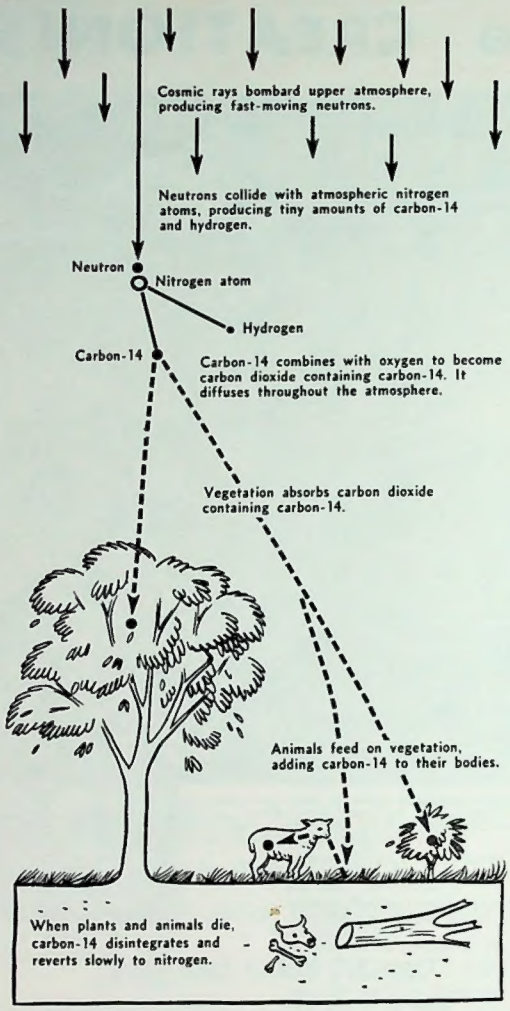

Diagram showing how carbon-14 is produced and absorbed by plant and animal life.

THE CREATIONIST Vol.2 No.2 Whole No. 6
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Carbon-14 Dating

By FRANK LEWIS MARSH

ONE OF the best articles to appear in recent months on the subject of carbon-14 dating is that by Lyman J. Briggs and Kenneth F. Weaver, in the August (1958) number of the *National Geographic Magazine*. It is entitled "How Old Is It?" The person who thoughtfully reads this well-illustrated article will be brought up to date on the subject of carbon-14 dating as it is understood from the point of view of uniformitarian scientists.

The reading of this article in the *National Geographic* brings to our attention again the importance of continually being alert to the difference between the uniformitarian point of view and that of the catastrophists. Most scientists of our day are uniformitarians. They are given this name because they assume that present-day conditions and processes in our natural world are pretty much the same now as at all times in the past. It is their opinion that the surface features of our earth have resulted entirely from the normal effects of moving water and air, of heat and cold, of wet and dry conditions, of volcanoes and earthquakes, of chemical action, et cetera, as we know these agents today. Uniformitarians give no heed to the Bible portrayal of a universal Noachian Flood.

The second group, the catastrophists, are so named because they believe that the natural agents, such as those just mentioned, have at times acted suddenly in the past to accomplish the reshaping of at least large portions of the surface of our earth.

It is common observation that the natural forces *do* operate in orderly, uniform ways from day to day. Because of this observable fact there is small wonder that individuals who refuse to believe in Biblical inspiration are uniformitarians. Christians believe that God has operated the natural forces of our earth in a uniform way since the Noachian Flood. A minor reason for the gift of the Written Word to man was to inform him with regard to the large events in the natural history of the surface of our earth. "Inspiration, in giving us the history of the flood, has explained wonderful mysteries, that geology, independent of inspiration, never could."[1]

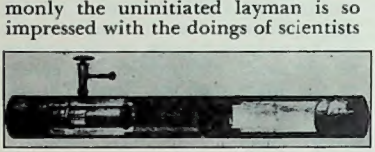
In the *National Geographic* article by Briggs and Weaver[2] is a specific example of the difference in interpretation between uniformitarians and catastrophists. We read, "Background count is determined by running such 'dead' samples as coal, which is so old that it contains no carbon-14 at all." These authors know that the half life of carbon-14 is 5,568 years, plus or minus 30. They correlate this fact with the assumption that the present-day proportion of carbon-14 to carbon-12 has existed all the way back to the time the plants that formed the coal were alive. Then, because the coal shows practically no carbon-14 present, they conclude that it must be very old.

Catastrophists, on the other hand, know from the Bible that the coal-forming plants were alive not many thousands of years ago; therefore they believe that the present proportion of carbon-14 to carbon-12 must *not* have existed at the time when the coal-formers were alive.

It is understandable that the uniformitarian scientist who knows that the principle of uniformity has operated in nature at least since the

dawn of profane history, has little patience for the person who refuses to accept the application of the principle all the way back merely because Genesis states that for a period of about one solar year natural forces were acting in extremely *un*uniform ways. However, unpopular though the point of view may be, the catastrophist confidently maintains his belief that the Bible is a book of truth, and one of his proofs for its inspiration consists of the evidences for a universal Noachian Deluge that are everywhere manifest.

Our day is a day of marvelous achievement in science. Very commonly the uninitiated layman is so impressed with the doings of scientists

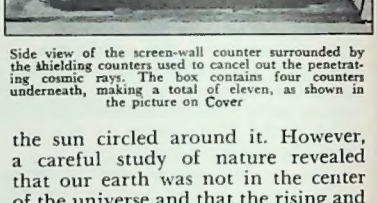


Screen-wall counter. The sample in the form of elementary carbon is disposed round the inside surface of a movable cylinder surrounding a grid, defining the sensitive Geiger counter volume. The two possible positions of the cylinder correspond to the carbon sample being alternately over the grid and removed from it, so the difference in counting-rate is a direct measure of the radio-carbon activity.

that their pronouncements and opinions are accepted as the ultimate in truth, at times even superseding the assertions of Holy Writ. There seems to be a fascinating halo about the results that have come from exact physical methods, especially when the apparatus is somewhat complicated like that employed in carbon-14 dating; and there is a particular fascination about simultaneous equations. It appears to be the opinion of the average man on the street that results obtained from modern equipment interpreted by complicated mathematics just cannot be wrong. Carbon-14 methods of dating have placed the remains of Neanderthal man as "older than 35,000 years"; therefore, it is assumed, this original cave dweller must actually have been gnawing bones that long ago.

But the extremely important point that too often is missed, not only by laymen but by scientists as well, is the fact that exact physical methods yield correct results *only under known controlled conditions*. Prehistoric carbon-14 datings are based upon assumptions that cannot be demonstrated, therefore do not belong in the category of empirical science. At the very most they are speculations. Many scientists and nonscientists alike are obsessed with the idea that a great deal of time has elapsed since living things first appeared on our earth, so they are avid to accept an apparent confirmation of this idea that is currently in vogue. They wish to discard any results that disagree with their opinion. Such is the frailty of the human mind.

The man or woman who believes in the inspiration of the Scriptures believes that the Author of the Bible is also the Author of nature. There can be no discrepancy between the clear teaching of the Bible and the demonstrable facts of natural history. "The book of nature and the written word shed light upon each other."[3] An illustration of how this has worked is found in the old idea that in the numerous references in the Bible to the "rising" and "setting" of the sun the Bible taught that the earth was in the center of the universe and that



Side view of the screen-wall counter surrounded by the shielding counters used to cancel out the penetrating cosmic rays. The box contains four counters underneath, making a total of eleven, as shown in the picture on Cover

the sun circled around it. However, a careful study of nature revealed that our earth was not in the center of the universe and that the rising and setting of the sun was only apparent, an effect actually caused by the rotation of our earth upon its axis. Yet even today we commonly speak of "sunset" and "sunrise." Are we consistent if we charge Bible writers with being unscientific when they use similar language?

Some believe that carbon-14 datings are an instance where science has clarified a Biblical teaching. Because of such evidence as the deletion in Matthew 1:8, 11, of four generations named in the Old Testament, and the addition in Luke 3:36 of one generation not named in the Old Testament, some Bible students have assumed that much more time has elapsed since creation week than Biblical genealogies would indicate. Such an assumption is thought necessary by these persons because they believe that carbon-14 datings of prehistorical materials are reliable and, therefore, demand that thousands of years be inserted into the Bible story from creation to the Flood, and again between the Flood and Abraham.

In the case of the assertions in the Bible that the sun rose and set we find no conflict with demonstrable science, because the Bible writers were employing the expressions the same way we use them today. The expressions are still of practical value even though science has demonstrated that the sun does not actually move around our earth. Is the situation somewhat similar in the case of Bible chronology and carbon-14 datings? Apparently not, because the entire Bible is written in such a way as to indicate that not many thousands of years have elapsed since creation week. To add many years would do violence to the simple portrayal of only a few thousand years. Is this a case, then, where the Bible and true science are in conflict?

Let us briefly scan the carbon-14 method of dating. Continuously, from interstellar space there come streaking into our atmosphere from all directions primary space particles that are about 75 per cent "plus charges," or protons, while the remainder are alpha particles, each consisting of two protons and two neutrons. Some of these collide with the atoms of our atmosphere and produce cosmic rays, which are largely protons. Some of these cosmic rays collide with, and explode, nitrogen atoms of our atmosphere. When a neutron from an exploded nitrogen atom collides with the nucleus of a second nitrogen atom it is added to the nucleus while a proton is driven out. This causes the nitrogen atom to change into an atom of carbon-14. Because of its instability this new atom is said to be radioactive.

By contrast, common carbon, carbon-12, is very stable and appears successively in such substances as carbon dioxide, carbohydrates or fats, proteins, urea, and back to carbon dioxide again without changing its atomic structure. Carbon-14 can also appear in such organic substances, but because of their instability carbon-14 atoms are continually casting off particles and returning to nitrogen.

The carbon-14 atoms in old wood, bone, charcoal, et cetera, might be thought of as grains of popcorn in a corn popper. As a carbon-14 atom "pops" it loses its radioactivity and becomes stable nitrogen. A span of 5,568 years, plus or minus 30, is required for half the carbon-14 atoms to pop. This is referred to as the half life of carbon-14. One half the original number of carbon-14 atoms will have "popped" by the end of the first 5,568 years. At the end of the second 5,568-year period only one fourth of the original atoms will remain, and by the end of the third 5,568-year period only one eighth of the atoms will be left, and so on. Eventually the number of "pops" or clicks in a Geiger counter will be too few to be distinguishable from the background count caused by other radioactive materials.

Probably within twelve minutes after its formation in our upper atmosphere, the new carbon-14 atom has combined with the oxygen of the air to form carbon dioxide. Winds and convection currents in the air soon mix this carbon-14-containing carbon dioxide through all levels of our atmosphere. In their important work of making sugar during the light portion of each day, green plants take carbon dioxide from the air. In this way carbon-14 is built into the parts of the plant. Then animals

build this carbon-14 into their tissues as they feed directly or indirectly on plant materials.

Scientists have studied this process very carefully and find that in our day an equilibrium apparently has been reached in the proportion of carbon-14 to carbon-12 in our atmosphere. This equilibrium stands at about one carbon-14 atom to one trillion carbon-12 atoms. Because of the carbon-14 atoms in their bodies the freshly dead substance of plants and animals all over our earth will cause about the same number of clicks per minute per gram in sensitive Geiger counters. However, as soon as an organism dies there is no more entrance of carbon-14 into the body, and atoms that were present at death gradually decompose to stable nitrogen.

The alert, inventive mind of Dr. Willard Libby conceived of a time clock in this phenomenon which, in view of the known half life of carbon-14, might make it possible, by comparing the clicks per minute per gram from the dead material with those of fresh substance, to determine how long the organism had been dead.

Enthusiasm over the carbon-14 method of dating increased as more and more objects whose ages were known were processed and gave results that generally agreed quite well with the known ages. Obviously a very valuable method had been found for dating plant and animal remains. But the question soon arose, how old could the material be and still be accurately dated by the carbon-14 method? As far back as historical checks were available for the materials, the method appeared fairly accurate. However, historical checks end about 2800 B.C. It is the opinion of Dr. Hessel de Vries of the Netherlands that, in view of the half life of carbon-14, about 70,000 years would be the oldest materials that could be dated by this method even by the most delicate and refined techniques.

But a conflict with Bible chronology occurs long before 68000 B.C. is reached. Because of the Noachian Flood occurring at approximately the time of the earliest historical checks thus far made, a difference of opinion arises with regard to the reliability of carbon-14 dates that are in excess of 2800 B.C. In the light of the fact that this dating method *is demonstrated to work* up to about 2800 B.C., uniformitarians believe it continues to give accurate dates as far back as the limit of the method, 70,000 years.

Other Factors

On the other hand, catastrophists, who believe in the inspiration of the Bible, see factors that would accomplish an increasing inflation in the carbon-14 age of materials beyond about 3000 B.C. as these organisms lived nearer and nearer to the Flood. Coal and oil, which catastrophists believe were formed by organisms which were living at the time of the Flood, show little or no radioactivity. One explanation is that for some reason the proportion of carbon-14 to carbon-12 during antediluvian times was definitely less than the present proportion of one carbon-14 atom to one trillion carbon-12 atoms.

The vast amounts of coal and oil suggest that plant life must have been very luxuriant at the time of the Flood. This could indicate that the percentage of carbon dioxide before the Flood was several times higher than after the Flood. A sudden reduction of the percentage of carbon dioxide to the present figure of 0.03 per cent could have occurred during the Flood. Under such conditions there would be a gradual increase of carbon-14 in the atmosphere from about zero immediately after the Flood until the present proportion to carbon-12 was reached.

The practical lack of radioactivity in coal indicates that trees at the time of the Flood contained very little carbon-14. If postdiluvian man were to find some of this wood in a dry cave and were to make a fire, and if charcoal from this wood were to be age-dated by the carbon-14 method today, the lack of radioactivity would be interpreted as indicating an age

for the man which would be very much in excess of the true age.

Admittedly such suggestions are speculative, but they are speculations based on Biblical assertions and Bible chronology. The assumption of the uniformitarians that the present proportion of carbon-14 to carbon-12 has existed all the way back to the time when the organisms being dated were alive is likewise speculative, but it is opposed to plain Biblical chronology, which pictures lucidly the elapse of but a few thousand years since creation week.

The point we must keep in mind here is that although the prehistoric dates listed by Briggs and Weaver were obtained by exact physical methods, still the results are not necessarily correct, because there is no way of determining whether the proportion of carbon-14 to carbon-12 has remained uniform through the whole span of time from creation to the present day. Without the demonstration of this uniformity all prehistoric dates are speculative, and from the standpoint of true, demonstrable science, must be categorized as invalid.

It is reasonable to assume that the proportion of carbon-14 to carbon-12 *has* fluctuated through past ages. One good reason for doubting uniformity here is the evidence that the strength of the magnetic field of our earth is and has been fluctuating. Drs. E. and O. Thellier[4] of France, as a result of a study of magnetism in iron particles in Roman bricks, concluded that the magnetic field of our earth had weakened considerably in the past 2,000 years, today's magnetic field being some 35 per cent weaker than in the year A.D. 200. It is understood that the weaker the magnetic field the greater would be the effectiveness of outer-space particles in producing cosmic rays in our atmosphere, with an accompanying greater production of carbon-14.

On this point Dr. Walter Elsasser[5] of the University of Utah remarks: "Moreover, even the over-all strength of the earth's field as a whole is not constant. In the century since accurate measurements of the field began to be made, its strength has declined about 5 per cent." We understand that the carbon-14 content of our atmosphere has increased 10 per cent since the first atom bomb was exploded. In the face of demonstrable evidence it appears unjustifiable to assume that carbon-14 datings can be even passably accurate when run on materials more than 5,000 years old.

Carbon-14 datings constitute a helpful line of evidence when used within the period where historical checks are possible. But we must bear in mind that any date that extends beyond the possibility of historical check is merely a guess based upon an undemonstrable assumption. Such data does not constitute true scientific evidence. Probably neither uniformitarians nor catastrophists will ever understand why the other group puts so much faith in its own point of view. In one case it is faith in the principle of uniformity, and in the other it is faith in the inspiration of the Bible. Certainly mere human assumption would constitute a poor substitute for the clear teaching of God's Word that life appeared on our earth not many thousands of years ago.

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Evolution or Special Creation?
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Does Recent Research PROVE EVOLUTION?

By WILLIAM J. TINKLE, Ph.D.*

DURING the last century, few words have made a greater impact upon Christian faith than the word evolution. Like many another English word, however, it is used with several different meanings. Many a person at present is quite at sea as to which meanings he should accept, or even considers denying any validity in the idea. A certain interpretation of evolution has become a dogma and is very widely taught as a scientific law in colleges, high schools, and even in grade schools; while scientists in the universities discuss recent discoveries and frankly state their doubts.

Charles Darwin's idea of evolution was that all of the species of plants and animals in the world, including man, have descended by slow changes from one or a few simple forms. His theory did not explain the origin of those original ancestral forms. Some modern writers state that evolution is the doctrine that present plants and animals arose from earlier forms by a long process of descent with change. This might mean the same as Darwin's definition or it might not. It is much less exacting. Others state that any fluctuation or change in animals or plants represents evolution. The definition of Darwin is the only one of the three that is definite enough to attempt to prove or to disprove, and is the version that has been fought most vigorously by theologians.

A few years ago we often heard the statement that evolution (Darwin's definition) must be true because all of the biological scientists accept it. The statement is not heard so often now, and never is made by one who knows the facts. Darwin's theory as to how evolution came about has been very widely discredited. At the same time it has been the custom to say that while we do not know how such a process could come about, it is a fact. Thus the tottering frame has been propped up. But since Darwin was the first man to convince any large body of people of the truth of evolution, to discredit him is to leave quite a vacant gap.

Among the biological sciences none has made more rapid or valid progress than genetics. Founded upon the careful observations and tests of hundreds of investigators, it lists and describes the characters that are involved in any change. This scrutiny has revealed but one type of phenomenon that brings about a lasting change in a species. This is a mutation. A young animal out of a thousand or a million will have an organ that is different from all of the others. Examples are white eyes, short wings, hairlessness, short legs, crooked legs. In the offspring of this animal, this mutation is inherited like any other character.

So far, the reader might say that the mutation idea supports evolution. But mutations are never in the upward direction. They do not make the animal better fitted to survive, but usually make it weaker. The animal may be better from man's standpoint, like the Ancon ram, born with crooked front legs, so that it cannot jump fences. But mutations never make plants or animals stronger, more complex, or more symmetrical. Then how can they be the material of a transmutation of a one-celled animal to man?

Some of us are wondering why the animal and plant kingdoms should be considered the exception to the rule. In astronomy and geology we study a universe that is slowly running down. The rate of the earth in its orbit around the sun is slowing enough to measure; the sun is becoming either cooler or smaller; the deposits of coal and petroleum are being used faster than they are being replenished. For a long time it has been apparent that some species of animal have degenerated; now we cannot find

*Author of textbook for colleges, *Fundamentals of Zoology*, Zondervan, Grand Rapids, Mich.

that any of them change in any other way.

Darwin had much to say about the improvement of animals by man. Since his time it has been proved that there is a definite upper limit to this improvement. When a "pure line" is reached, further selection does not result in improvement. When I first learned this fact, proved by Johannsen of Denmark, it struck me with sledge-hammer force.

A COMMON KIND of improvement of animals by man is crossing to combine desired characters already present but in different breeds. This recombination is not true evolution, since nothing new is developed. It is a process which is not frequent in nature.

The bones of early man do not help us greatly, for many of them are single specimens or even fragments. In our homes for the feebleminded are types which may cause the anthropologists of the future to puzzle their brows. Only two types of ancient man are represented by an ample number of skeletons. Of these the Neanderthal men were peculiar but had normal cranial capacity. Cromagnon men were superior to modern man in cranial capacity and stature, and made paintings and carvings which we behold with highest admiration.

Scholars have been debating as to whether man arose by special creation or by evolution. If it be proved, as now appears likely, that the observed changes are always horizontal or downward in nature, evolution cannot be regarded an alternative to creation. The theory, which has been cited by atheists as one of the strongest proofs of their position, no longer is a stumbling block. Nor can it be used to justify the doctrine of *laissez faire*, with the expectation that superior varieties will arise by natural selection. The average may be shifted by the loss of the individuals least fit to survive, but the ones that remain are not changed; experimenting has taught us that the next generation will not be different from the present one.

The subject is not exhausted, but if the reader desires more he should consult recent books on the subject. We may summarize by saying that if the thoughtful man believes the Bible to be the Word of God, science can present no facts to rob him of his faith. The Bible does not devote many pages to science, but its statements never have been successfully denied. It is gratifying to note that the progress made in biology in the last twenty years, rightly interpreted, leads men to a greater faith in God's Word.

However, the scientists who say that evolution is their religion, and those who say that they believe in evolution in order that they may not have to believe in anything supernatural, doubtless will hold on to the theory to the bitter end.

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The Case for Complete Adult Creation

By Dudley Joseph Whitney, B. S., Exeter, Calif.

OUR forefathers believed in the creation of an adult man, Adam, and the derivation of his wife, Eve, from him by divine power, but modern scholarship has drawn us so far from this concept that many of us know not what to believe. A return to the Genesis account may help us.

The first chapter gives a general outline of human creation, but chapter two presents some details concerning it. The first reads: "And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea. . . . And God created man in his own image, in the image of God created he him; male and female created he them. And God blessed them." The second reads: "And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul. . . . And the Lord God caused a deep sleep to fall upon Adam, and he slept: and he took one of his ribs, and closed up the flesh instead thereof; and the rib, which the Lord God had taken from the man, made he a woman, and brought her unto the man."

Unless extreme violence is done to language, only one conclusion can be drawn from these accounts. Man, a definite individual, was divinely created as a perfect being "in the image of God." He lived how long we know not; and then a perfect woman was made from a part of his body and became his wife.

Our Saviour authenticated this account in chapter two when he repeated as fact a part of it: "Therefore shall a man leave his father and his mother, and shall cleave unto his wife: and they shall be one flesh."

Taking this account as part of the inspired Word of God, no other conclusions seem possible than that the first man and woman were created miraculously, as adult beings, and not by growth or by derivation from lower forms of life. An analysis of this may prove profitable.

Possible Methods of Origin

First, a new form of life (man, whale, tree) must come either from a previously existing living thing of different nature, or originate independently. The first man must either have been born from a non man, or have come from non-living substance, or from nothing. The first tree must have come from a fern spore, pine nut, or something of the sort, or from non-living material. This is also true of a whale, or any new form of plant or animal.

Again, the first of any new form of life must either develop by growth from a germ, or else start complete, as an individual able to be self-sustaining in its environment.

Take first, the possibility of origin by derivation from another kind of organism. Creation would be possible in this way, for God could create in any manner He wished. He could make a whale to be born from a seal, or hatch from the egg of a sea turtle, or grow from a piece of sea weed. Man could have been born from an ape, or a wolf. God could make the oak grow from a fern spore.

Obviously, however, the birth of a whale from a seal would be more than a freak of nature. Nature itself could never produce that freak. Nothing but absolute miracle could do that. Man could never be born from an ape or a wolf as a freak of nature, but only by miracle. The Creator could have His choice of making man without help from an ape or of making him from an ape by a miracle. The miracle would be a miracle in either case. Being a miracle, therefore, what advantage can be seen in selecting a miraculous foster mother for the first human instead of creating that human outright? Creation being creation, it would seem more reasonable to be out and out creation instead of half creation and half birth from something else.

Possibility of Germ Creation

Then comes the question of the creation of the germ, independently of any other kind of a living thing, and having it grow into the plant or animal being created. St. Augustine favored this idea, and has been called an evolutionist for flirting with it, but nothing more than a clear look at what it includes is required to show its absurdity. Apply it to man first.

By this method the Creator, instead of making the real man, Adam, would create the germ of a man. Where would he put it to grow into a man? Who would care for it until it was able to care for itself? The question is absurd, and the whole idea is as absurd as the question. True, the Creator might create the human germ in

the womb of an ape, or wolf, but there we have miracle combined with absurdity again.

There is still another phase of the matter. The biologist can study the germs of two different creatures, cat and dog for example, and be unable to tell one from the other, yet each germ would have within itself the creature designed to grow from it, the color of eye, pattern of hair, shape and size of claws. In other words, the germ of the creature to be contains every essential feature of the creature that is to grow from it. For this reason the creation of germ of the whale or of the man is fully as great a creation as the creation of the full grown whale or man.

Reason in Complete Creation

Complete creation has always been the belief of the Christian who took the Scriptures simply and naturally. A book written in 1857, *Omphalos*, by P. H. Gosse, a British naturalist of standing, goes into this matter of complete creation in detail, taking up numerous plants and animals of different kinds and showing that in any part of the life cycle from germ to adult and back to germ again there are indications of a pre-existing life. Creation must be a starting point some place in that life cycle, and the complete adult form, though not necessarily the form in which creation occurred in every instance, is at least the most reasonable place for creation to occur. In very many instances an adult form, or something near it, is the only form in which the organism could sustain itself. Not until a young whale was weaned, for example, could it be self-sustaining, and creation in an earlier form would be incomplete and unsatisfactory except by miraculous assistance in carrying along the young creature to the weaned stage. The same thing would be even more true with man. Granting creation, then, adult, complete creation is demanded. Germ creation is a fallacy.

Creation by Minor Changes

The obvious alternative to complete adult creation is creation by beginning with the most simple possible form of life and altering the descendants little by little until every kind of creature is formed. This, of course, is the concept of evolution. However, evolution must be natural and non-miraculous or it is not evolution but a form of special creation. Something like this is in fact favored in a nebulous, indeterminate sort of way by some creationists who do not want to accept evolution in its entirety. Take an hypothetical example or two.

A common example is the bat, whose most probable terrestrial ancestor would be a shrew, a creature shaped much like a mouse. Suppose this to be altered (either naturally or by miracle) so that a fold of the skin will spread out from body and legs on each side to become a wing. If this occurs in one great change, the thing is as great a miracle as adult creation without ancestors. If it occurs little by little, in a hundred, or a million generations, the intermediate forms will have organs that will not serve as legs and cannot serve as wings. Miracle alone can keep them alive and feed them during their generations. Naturally, or by evolution, this is impossible. The very idea of evolution in a thing like that is farcical. Substituting creation in this manner for evolution, a multitude of small miracles would be used in place of one big miracle.

Or instead of the bat, visualize the creation or evolution of the wing of a worm or other grub-like creature so as to form the first insect. Until the wing was complete and useful it would be worse than useless. This is impossible in evolution, and absurd as a manner of creation.

Or instead of bat and insect, assume the alteration of shrew into whale. Exactly the same difficulty in having intermediate forms would exist, and of course, in the rocks there are no signs whatever of intermediate fossils between whale and non-whale ancestors provided there was such a thing. All first creatures of every great type appear suddenly, without sign of alteration from simpler ancestors. Having a complete animal of any special type—original feline, or whale, or oyster, or snail—alteration of its descendants is of course not to be objected to, within limits, but that is another proposition altogether.

Conclusions

The first is, that creation evidently was an instantaneous process. Numerous cases of creation are recorded in the Old and New Testaments. The healing of a leper is the creation of sound flesh to replace broken, diseased flesh; so is every other healing doubtless a matter of the creation of new nerves or of something else. The feeding of the five thousand was the actual creation of food.

If the earth is old, as geologists assert, creation could occur at intervals for ages, but each new type of creature could be an instant creation nevertheless, and there is nothing to indicate that it was not. On the other hand, if students of creation are correct in disbelieving in the long ages and in believing that the fossils came by the Deluge, creation in six literal days is certainly as reasonable kind of creation as creation in a long time.

Creation in six literal days would certainly be preferable to creation in six hundred, or six thousand years. Except as Genesis indicates to the contrary, all creation might have been accomplished in the twinkling of an eye.

(continued p. 40)

In Whose Image?

By HAROLD W. CLARK

IN A RECENT book a world-famous explorer and scientist berates the attitude of certain "snobbish" individuals who do not wish to admit their relation to the apes. A specially created Adam and Eve are the kind of ancestors these persons choose to recognize.

But no matter what we choose to believe, says this author, *facts are facts*, and there is indisputable proof that man and the great apes are closely related, and that both have descended from common ancestors.—(Roy Chapman Andrews, *Meet Your Ancestors*. Viking Press, New York, 1945.)

Facts are facts! Indisputable evidence! Let us examine the case, and see what is fact and what is assumption, what evidence is indisputable, and what may be called in question.

Comparative anatomy, Dr. Andrews says, demonstrates that human and ape bodies are built on similar patterns. We agree! There is nothing questionable about this fact.

But almost in the next breath comes the assertion that the human family tree goes back to the extinct *dryopithecids*, or forest apes. These creatures, we are told, were *probably* the ancestors of the gorilla, chimpanzee, orangutan, gibbon, and man. The very language used indicates plainly that this is merely an assumption, not a fact.

Suppose we humans do have skeletons and muscles and viscera like those of the apes. What does that prove, if anything? Anyone who is familiar with the principle of adaptive modification in anatomy will tell you that if you wanted to create an animal to walk upright as does man, or to approximate man's locomotion, you would have to produce both skeletal and muscular systems like those of man. The conclusion is so obvious that it seems almost foolish to even mention it. Why then, should it be assumed that this similarity means descent from common ancestors? Such a viewpoint is made necessary—in fact, is made possible—only by the supposed "fact" of evolution. In other words, only by taking evolution for granted, can the evidence be made to prove our relation to the apes.

The reader needs to remember that "relationship" may mean either of two things—either descent or structural similarity. Of course, if evolution were proved beyond a doubt, then "relationship" to the apes would mean descent from primitive ape-like ancestors. But just as long as there is a possible doubt as to the validity of evolution, "relationship" means only structural similarity. This means that the creationist may admit that he is related to the apes, for both he and they belong to the class *Mammalia*, order *Primates*. But beyond that it means nothing until all possibility of creation "in the image of God" is dispensed with entirely.

Most likely some one will suggest that man could not carry the image of God and the likeness of an ape at the same time. This is a puerile argument. Look at the whole animal kingdom, and see the different patterns in which living creatures are made. Of them all, the *primate* type is the only one we could imagine as in any way resembling the Creator, if we are to think of the Creator as having any kind of form. On the other hand, it is generally admitted that the significance of man's creation in the image of God lies principally in his mental and spiritual likeness rather than in his physical structure.

Whatever attitude we may take on this point, it must be recognized that in order to live in similar environments and to react alike to these environments, man and the apes must have similar structures. In nature we find animals for every niche and habitat. It is true that several kinds of animals live within the same general territory, but this does not mean that they occupy the same ecologic niche. Unless we expect to find a vacuum in nature, we must expect creatures of the ape type to fill it.

Man, by his superior intellect, is able to live in a greater variety of surroundings than any of his ape "relations," even though the ape may simulate some of his ways. The example of the chimpanzee that learned to ride the velocipede proves

nothing more than a certain degree of imitative and mechanical ability. But who built the velocipede? The mentality of the chimpanzee is only a shadowy, borderland intelligence as compared to that of man.

Building upon the assumption that man has evolved from ape-like ancestors, our scientist friend proceeds to tell a highly imaginative story of changes in structure and habits by which *Dryopithecus* and his tribe evolved into *Homo sapiens*. Let us notice what the supposed changes involved: The long arms lost their power of swinging through the trees; the feet lost their grasping ability; the thumb appeared on the hand; the tail disappeared, probably because the ape sat on it and bent it down underneath him (!).

Every one of these "changes" is purely hypothetical. There is not one scrap of proof that they ever occurred, except for the fact that apes have one set of features and man another.

If it is once admitted that God may have created man and other living creatures upon the earth, "after their kind" (Genesis 1: 21, 24, 25), the next question to arise would be as to what kind of plan or system He would use. In order to have variety, there must be provided a series of types or patterns, and creatures in each type must have a certain degree of variation within the type.

Several Major Types

In the animal kingdom the zoologist finds several major types, such as the single-celled type, the hollow-tube type, the tube-within-a-tube type, the Mollusca type, the anthropoid type, and the vertebrate type. Within the vertebrate type, for example, are several subtypes, such as the fish, amphibian, reptile, bird, and mammal. Within the mammalian subtype, to carry the case farther, one finds the next subdivision into rodents, carnivores, several types of hoofed animals, primates, etc. The zoologist recognizes this plan of the Creator when he classifies any animal. An ape, for instance, may belong to the

Phylum	Chordata
Subphylum	Vertebrata
Class	Mammalia
Order	Primates
Family	Simiidae
Genus	Troglodytes
Species	Gorilla

Each step down in this scale of classification indicates a part of the Creator's plan:

Chordata—animals with a notochord.
Vertebrata—chordata with a backbone.
Mammalia—vertebrate with hair.
Primates—mammals with upright posture.
Simiidae—primates with certain ape-like features.
Troglodytes—a simian named from its supposed dwelling in caves and mountains.
Gorilla—a native African name.

As far as the family the subdivisions represent natural groupings. Below the family, the genus and species may be more or less arbitrary, according to the individual notions of the men who did the systematic work.

Now, if any one will look at this whole matter from the angle of the first chapter of Genesis, realizing that in the animal kingdom we have the evidence that God made each creature "after his kind," we may accept the record regarding men, that he was created in the image of God, and not in the image of an ape. (Genesis 1: 26, 27; 5: 1; James 3: 9; 1 Corinthians 11: 7.)

Each animal may be placed in his proper position in the systematic scale because of his structure, not because of his ancestry. We do not class a dog as a dog because he descended from wolf-like ancestors, but because he is a dog by structure and behavior. Similarly we class man as a primate because he shows primate structure, and not because we suppose he came from ape-like ancestors.

It is interesting to note how an eminent authority such as A. H. Clark, of the United States National Museum, deals with the problem. In his *Zoogenesis* (pages 29, 224-227) he points out the following facts:

1. There is a clear-cut difference between man and any of the apes.

2. "There is not the slightest evidence that man is descended from the apes."

3. No theory of descent from the apes can account for human attributes.

4. Structural specializations in man, such as the opposable thumb, cannot be explained as modifications of ape characteristics.

5. There are no "missing links."

Then, after discussing these points, he declares that man and the ape "must have

(continued p. 40)

Richard Goldschmidt's Refutation of Neo-Darwinism

By Professor George McCready Price

A NUMBER OF YEARS AGO, a young German biologist named Richard Goldschmidt, of Jewish race but a Lutheran in religion, set himself the task of proving by laboratory research what Charles Darwin has *assumed* to be true. He was able to travel widely and soon became a world authority on the gypsy moth *(Lymantria)*, following about the same line of work with it that has been done by Thomas Hunt Morgan and others with the fruit fly *(Drosophila)*. Ultimately Goldschmidt became director in the famous Kaiser Wilhelm Institute in Berlin; but when matters began to get dangerous for even the most eminent men of his race he came to America, and has for several years been head of the department of Zoology in the University of California.

In a recent work (*The Material Basis of Evolution*, Yale University Press), he tells of his disappointment in not being able to verify the theory assumed by Darwin. And when he gets through with his subject, the reader cannot fail to realize that the objective facts as now known tend to discredit completely those theories about the origin of the various types of life made popular by Charles Darwin.

HE FIRST TELLS US of the problem and how he set about its study and solution:

"The working hypothesis which I started to prove was that geographic variation is actually a model of species formation. As I happened to be the first geneticist who realized this problem and embarked upon its experimental study, and as there is no other work available in which the same investigator has done all the taxonomic, ecological, morphological, physiological, cytological, genetical, and most of the field work with all available geographical races, I may be pardoned for presenting first and in more detail my own results, which turned out to comprise practically all the aspects of the problem, which have also been emphasized by others" (p. 32).

His estimate of natural selection may be judged from the following sentence which he quotes with approval from J. C. Willis:

"Darwin's theory of natural selection has never had any proof except from *a priori* considerations, yet it has been universally accepted" (p. 211).

As intimated above, Darwin's idea was that when geographical races or subspecies appeared, they would gradually become more and more unlike the stock from which they had separated, and would thus ultimately develop into distinctly different species. But Goldschmidt's experience showed this to be untrue:

"There is no reason, at least as far as the factual material goes, to suppose that isolation makes subspecies develop into species. The conclusion is the same as that derived from our former discussion. Isolation or no isolation, the subspecies are diversifications within the species, but there is no reason to regard them as incipient species" (p. 136).

He develops a very complete and devastating line of argument against this whole idea that subspecies are incipient or beginning species. And his final conclusion on this point is as follows:

"Subspecies are actually, therefore, neither incipient species nor models for the origin of species. They are more or less diversified blind alleys within the species" (p. 183, italics as in the original).

He declares indeed that "there is no such category as incipient species"

(p. 396). Further, "This statement of the problem already indicates that I cannot agree with the viewpoint of the textbooks, that the problem of evolution has been solved as far as the genetic basis is concerned" (p. 6). Also, "The Neo-Darwinian theory of the geneticists is no longer tenable" (p. 397).

THE GIST OF HIS ARGUMENT is that there are natural groups, call them large species, *rassenkreise,* or whatever you wish, which are distinct from one another, and separated from one another by "bridgeless gaps," with no transitions from one to another (p. 29). Within each of these groups varied changes may occur, but such changes never amount to enough to form a distinctly different kind, and we have no scientific knowledge that new species have been formed in this way. This is the sober and considered verdict of Dr. Goldschmidt, after a lifetime spent in the study of these problems, with a detailed knowledge of all the biological facts such as is perhaps possessed by no other living man.

Surely this conclusion is in accord with the record in the first chapter of the Bible, that God created the various plants and animals and ordained for each to reproduce only "after its kind." On this point note the words of Goldschmidt:

> "Nowhere have the limits of the species been transgressed, and these limits are separated from the limits of the next good species by the unbridged gap, which also includes sterility" (p. 168).

Obviously, then, we may now regard some points as settled. *There are such genuine entities as "species" which correspond fairly well with the Genesis "kinds."* In most cases they are much more inclusive than what modern men of science term "species"; for the splitters have had charge of these matters so long that they have divided and subdivided every natural group of plants and animals. However, on this larger view the species are natural groups, each separated by bridgeless gaps from all others, though capable of much diversification within its own limits, but still persisting as commanded in the beginning to reproduce only "after its kind," Darwinism and Neo-Darwinism notwithstanding.

IT IS ONLY FAIR TO STATE here that Goldschmidt still believes in organic evolution *somehow.* Any clear-headed man or woman who accepts the current theories of geology, who believes that geologists have acquired the magic skill of assigning some fossils to one age and some to another, that is, any one who accepts *the differential dating of the fossils* and refuses to believe that the Flood of Genesis could and did destroy and bury all these ancient forms of life—I say, anyone who believes the current teachings of Lyell's geology is bound to believe in organic evolution *somehow.* For the current theories of geology, as taught by Lyell and his followers, *are evolutionary through and through.* They profess to give an outline of how life has appeared in many successive and advancing stages during uncounted millions of years; and all this means evolution.

In short, it was this system of Lyell's geology which prepared the world for Darwin; for without Lyell there could have been no Darwin. Hence every modern student of animals and plants who still retains implicit confidence in the current evolutionary teachings of geology is bound to believe in *some* scheme of evolution. And when he finds, as Goldschmidt has done, that no biological processes can explain how these "bridgeless gaps" between the natural groups can be crossed, he is almost sure to continue to do, as Goldschmidt has done, indulge in speculations about some unknown or supernatural method of originating new kinds.

But the latter method of speculating is entirely outside the realm of genuine science. Sober, honest science is now acknowledging itself bankrupt, as far as being able to explain the origin of the various kinds of plants and animals is concerned. For nearly a century, biologists have been professing to explain in some natural way how the animals and plants came into existence. And now it turns out that all their theories have been proved wrong. Obviously, the inevitable conclusion is that the first animals and plants *did not* come into existence by any method which we can call *natural;* they must have been *created.* For that is exactly what is meant by the record of creation, an origin by some method of the divine activity which is not now going on, and hence was not what we call *natural,* but *supranatural.*

All intelligent Christians acknowledge that God is just as truly concerned in natural processes as in the supernatural. It is the same God in the one as in the other. But the Bible tells us that the first plants and animals were produced in ways which are now no longer in opera-

tion; and it calls this origin a creation. And now modern science, after many long years of study and investigation, is obliged to say that the first forms of living things must have come into existence by a genuine creation, not by a gradual process of naturalism or evolution.

Moody Monthly January, 1945

Case For Adult Creation
-from p.35

We have dealt with instant creation of individual forms, but since the various kinds of plants and animals are so dependent upon one another, one can hardly see how creation could be accomplished except by having the different kinds of plants created simultaneously, or almost simultaneously.

Examples of the interdependence of different forms of life are abundant: flowers need bees or other insects, at least many of them do, and the insects need the flowers. Cattle need grass, but cattle also help grass, if overpasturing is not done. In nature most plants and animals need the help of something else and help something else, indirectly if not directly. Slow creation, creation by growth over long periods, has in many respects the same kind of disadvantage that a creature half bat and half shrew, or half worm and half flying insect, would have. Consequently, viewing nature in a reasonable manner, we can see that nothing but creation—the special exercise of divine power—could bring a well filled earth into being, and having creation, the kind of creation which Genesis records is the most satisfactory kind of creation that could be.

Moody Monthly October, 1933

In Whose Image?
-from p.37

had at some time a common ancestor." Why? Simply because he believes that there has been a long period of evolutionary development, and since man and the apes are somewhat alike, both must have come from common stock.

It is the same story everywhere we meet it, that is, evolution is accepted *as if it were true*, and upon this *assumption* the facts of nature are interpreted. Take away the evolutionary assumption, and the house of cards falls flat. In other words, unless we accept the evolutionary hypothesis, there is no reason for thinking that man and the apes are related by descent, either one from the other or from common ancestors.

Let us not forget this one point: The evolution of man from ape-like ancestors is not proved by man's likeness to the apes, for this likeness is taken as evidence for family relationship only because evolution is taken for granted. The same evidence cannot be made to work both backwards and forwards. Take away the speculations in this situation, and there remains no proof of man's descent from anything else but from "Adam, which was the son of God."

OUR TIMES, JUNE, 1946

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WHY EVOLUTION DISCOUNTS BIBLE

By G. C. COLE

SO far as I know, there is not an evolutionist but either rejects the Bible as merely Oriental literature, and not the word of God, or else mutilates it by false interpretation.

One of the most insidious ways to cast doubt upon the Bible record is to place upon it the interpretation like the one copied from the "Young People's Graded Lessons," published by a house which I will not mention, as such an act might be interpreted as a "personality." This literature is placed by the hundreds of copies in the hands of our Bible-school students of the "teen" age. This is the passage, discussing the first portion of Genesis:

"The first two verses of the first chapter are not in poetical form, and are introductory in thought. We may call them the prologue. The first three verses of the second chapter are not poetry, and have the style of an afterthought. We may call them the epilogue. The rest is poetry. The thoughtful teacher will understand that poetry and history are very different literary productions. The poet aims to paint pictures, not record literal facts; to teach lessons by stirring the imagination, not to trace real events. . . . The temptation of Eve is a very interesting story." Again, in speaking of the Babylonian mythology and the Genesis account of the deluge, it says: "The scientific, or, rather, non-scientific, attitude is similar, since both narratives are epic poetry. They must be read and interpreted as poetry."

This is quite in concord with the rank German criticism of De Wette, who refused to find any history in the Pentateuch, claiming all is legend and poetry. Dozens of destructive critics have voiced the same opinion.

Over against these I have pages of expert opinion gleaned from godly scientists and students of the Scriptures, from Ampere and Alexander Campbell, down to the present time. These authorities claim that the passages lightly turned aside by the "authorities" above quoted are plain narrative and authentic history.

The word "creation" is the one pertinent word that the destructive critics wish to eliminate or nullify. The reason is quite apparent as we reflect upon the following statements of eminent evolutionists:

Huxley: "If there was a creation, then there was no evolution; if there was an evolution, there was no creation."

James Sully: "The doctrine of evolution is directly antagonistic to that of creation."

Dr. Pfleiderer: "There is only one choice; when we say evolution, we definitely deny creation. When we say creation, we definitely deny evolution."

Haeckel: "With a single stroke, Darwin has annihilated the dogma of creation. Evolution is the non-miraculous origin and progress of the universe."

These men are honest in their contention, and not like so many of our modernists, who seek to avoid the clear-cut dilemma by camouflage.

As to the word "creation," a study of the Hebrew leaves no satisfaction for the evolutionist. In that language *barah*, the word translated "create," means a miraculous bringing into existence. This is not the word the Hebrews used for the ordinary act of making or transforming. That word is the word *ahsah*, and our translators, in making the English version of the Bible, translated it as "made," while true scholarship likewise led them to translate in every case the word *barah* as "create." The Hebrew conception of the word *barah* is that it invariably asserts a miraculous act of bringing into form. Delitzsch said: "This word is never used except of a divine act. It expresses the origination of the absolutely new." Another authority (Perowne) said: "The word is never followed, like other words meaning 'to form,' or 'to fashion,' and the like, by the accusative of the material out of which the thing is fashioned."

Any attempt to translate *barah* in the sense of "growth," or "evolve," is dishonest from the exact usage of Hebrew words. That language is quite prolific in expressions that might have been used instead of it, if God had meant that, or Moses had so understood. The words *gadal*, *dagash*, *galak*, *yatsag*, *yatsa* and *alah* are words that represent the various phases of "grow." But Moses did not use these. And his intelligence was such that had he designed to express the other meaning, he might have used the Hebrew *tsamach*, which, in that language, has a meaning in the sense of "evolve."

And, again, Moses and the evolutionists part company in another respect. The evolutionist has much to say about the "primitive jungle" and "wilderness" and "woods" or "forest," in which the first evolved man ran at large. But Moses placed him in a "garden" which is far different from any of the evolutionary speculations. And here, too, the vocabulary is opposed to evolutionary guesses. Moses used the word *gan*, "garden." He did not use a word which meant the popular evolutionary habitat for early man. *Choresh* is the Hebrew for "jungle," *midbar* for "wilderness," and *yaar* for "woods" or "forest." But Moses did not use these words. And in the keen, discriminatory vocabulary concerning these things, we have a splendid evidence that God did not misrepresent by using a word that means something different than it is intended to mean, nor did Moses make the mistake in thus representing it. The man who substitutes "evolve" for "create," in the Genesis account, is both dishonest and unscholarly.

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The American Scientific Affiliation

Unfortunate Changes Have Come About in an Organization Founded by Christian Men of Science

By Dr. Bolton Davidheiser

Twenty years ago the American Scientific Affiliation was founded as an organization of scientists who are conservative Christians. Its purpose is officially stated as being "to study those topics germane to the conviction that the framework of scientific knowledge and a conservative Christian faith are compatible." But something has happened during the intervening years, and this has been summed up by a member in the following words: "Thus, in fifteen years we have seen develop within the A.S.A. a spectrum of belief in evolution that would have shocked all of us at the inception of our organization."

He expresses the opinion that membership is now represented by four main types: (1) those who are less well informed than the others (note the implication of this) and who protest the change, (2) those who have reacted by expressing themselves less frequently on scientific matters, (3) those who have become less active in the affairs of the A.S.A., and (4) those who continue to remain active in the Affiliation and who express their present convictions together with the challenge, "If you have a better approach, please tell me quickly for this one of mine has been bought at a great price to my peace of mind."

Although this opinion appears to be a reversal of the purpose for which the organization was founded, he does not feel that its work is finished. On the contrary, he believes that "only now are we ready to move into the field of real potential contribution—that in releasing Truth from the restrictions we have been prone to place upon it, we can really view it in the true fulness which the Christian perspective gives us."

In another article in the Journal of the A.S.A. the same author says, "Again, the Adam-Eve sequence can be explained as spiritual. Whether this is true or a dodge is, of course, an academic question, for is it not the spiritual message which God seeks most to impart to us? Then why worry about what passages are to be interpreted literally and which figuratively. Look, rather, to God to reveal Himself more fully and most directly to you from each passage according to your need."

Another member has written an article around the question, "If evolution is now a solidly established scientific law which must be accepted and if evolution cannot be harmonized with the biblical story, then what is to be our attitude toward the Bible?" Considering the purpose for which the A.S.A. was founded, one might rather expect the question to be worded, "Since the Bible is the infallible, inspired revelation of God if evolution cannot be harmonized with the Bible, what is to be our attitude toward evolution?" After showing that evolution indeed cannot be harmonized with Scripture, he ends the article thus: "It is therefore necessary to conclude this discussion with a question instead of an affirmation. Is harmonization possible, and if so, how?"

The author of the article just mentioned sent a copy of it before publication to the president of the A.S.A. and the president's reply is published. He says that he had hoped to discuss it with a 'mature Christian person" but

could not find one. He professes that "the biblical account clearly implies man as a special Creation of God," and that evolution does not have the final answer. "However," he concludes, "we must reserve final judgment on this point until we have more evidence." He next says, " Concerning the matter of the antiquity of man, I must say that I do not see any possible difficulty between the biblical account and the theory of evolution."

Concerning the suggestion that "the story of creation was written in picturesque, figurative language and. . . was never meant to be taken literally" he says, (1) that many Christians accept this, (2) that it is the attitude of a number of A.S.A. members, and (3) "we must be very cautious and indeed quite charitable with those who take this point of view." This charitable attitude toward liberals is characteristic of those who are in transition from a conservative position, and so is the not-so-charitable attitude toward fundamentalists.

For example, it is reported that at the recent conference on "Origins and Christian Thought" sponsored by several departments of Wheaton College, when a professor of the Bible Department of the same college protested the anti-Bible nature of the conference, he was rebuked by one of the conference speakers who said that his position was the most dangerous one of all, and further that the speaker felt sorry for any person who came under the influence of his teaching.

To become a member of the A.S.A. it is necessary to sign a statement of faith which would seem to make impossible the thing which has happened. That it has happened proves only that signing a statement of faith is in itself not enough. Not long ago at a meeting of the A.S.A. a science teacher who is on the faculty of another Christian college got into a discussion on the evidences for the existence of God. When the subject of miracles was brought up, he hedged until he was asked outright, "You do believe in miracles, don't you?" He refused to answer, and the chairman closed the meeting. The president of the college he represents once said that the school would always be sound because the faculty is required to sign the statement of faith each year.

The writings of these men have a wider circulation than the Journal of the American Scientific Affiliation and their influence in the classroom is still greater. Furthermore, one can surmise the effect the position of the A.S.A. will have on those science teachers who lose no opportunity at deriding the Bible and the Christian faith in the classes they teach and in the books they write.

"Now the Spirit speaketh expressly, that in the latter times some shall depart from the faith. . ." I Timothy 4:1

This article has appeared in various periodicals, such as *King's Business The Voice*, and *Sword of The Lord*.

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SOME THINGS INCONSISTENT WITH THE THEORY OF EVOLUTION

By Joseph B. March.

PERSONS who repudiate the account of creation given in the first chapters of Genesis usually hold that all life—animal and vegetable—came from a common source; that a bit of organized matter "happened" in a dead world where there was large room for expansion and evolution; that first vegetable life was evolved and then the lower forms of animal life, then through gradual rising through eons of time from the first simple types to the higher forms of animal life the process culminated in man, the glory of creation. They also hold that the brain and mind of man came about in the same way. They hold that from the instinct of the primordial forms which have no instinct but to take food in which they live and burrow, little, if any, more than the rootlets of trees which gather food for the trees, there were gradual risings to the instincts of the higher of the inferior animals whose instincts sometimes appear to border on reason, and then to the mind of man. These changes, they say, are brought about by the exercise of the instincts due to the necessity of supporting and protecting life.

Now, in the supposed ascent from the lowest to the highest forms of animal life, far above the lowest forms, and far below the highest forms, we find the bee. Let us examine the knowledge it makes use of in the making of its honey cells. The figure it uses is the hexagonal prism so employed as to form the honeycomb. In order that the honey cells may be fitted together without intervening spaces, the walls of one cell must form also a wall of the adjoining cell. A geometrical figure must be used that will meet that condition.

In order that regular polygons of the same size may be fitted together exactly, one of their interior angles must be contained in 360 degrees—a complete circle—an integral number of times. Each of the interior angles of an equilateral triangle is sixty degrees, and it is contained in 360 degrees six times, and that figure may be used. Each of the interior angles of a square is ninety degrees, and it is contained in 360 degrees four times, and it may be used. The interior angles of a regular pentagon are each 108 degrees, and it is not contained in 360 degrees an integral number of times, and it may not be used. Each of the interior angles of a regular hexagon is 120 degrees, and it is contained in 360 degrees three times, and it may be used. Since the size of the angle increases as we increase the number of sides, we see that each of the interior angles of a regular polygon of more than six sides is contained in 360 degrees less than three times, and none would be contained in that quantity exactly twice, for that would make the angle 180 degrees, and the sides would all lie in a straight line.

We see, then, that of all regular polygons, only the triangle, the square and the regular hexagon may be fitted together exactly, and that only those figures may be used and have the cells in the comb fitted together without spaces among them. Then, why is the hexagon chosen for the bee (not by the bee) in preference to the other two possible figures? Let us see.

An equilateral triangle of the perimeter of A has an area of $.0481A^2$, a square of the same perimeter has an area of $.0625A^2$, and a regular hexagon of the same perimeter has an area of $.0722A^2$. The area of the hexagon being the greatest, the hexagonal prism would have greater volume in proportion to the amount of

wall to be built than either the triangular prism or the parallelepipedon. Besides this advantage, the hexagonal prism has the most inside compass, affording the bee more room in which to work.

The instinct to construct its honey cells thus resides in the brain of the bee, smaller than a common pin's head, for if we injure the brain it can not work. To suppose that such instinct as that was evolved from the lowest types of animal life through gradations, the ascent being brought about by the activity of the rudimentary nervous system and later the activity of the brain, is absurd. Let us rather suppose that this instinct was placed in the tiny brain by God Himself. Man is endowed with that glorious treasure reason, and he can work out these things for himself, and he gains the knowledge by the study of mathematics, which, as has been pointed out, is used by the bee in the construction of its honey cells. The bee can not do this, and this necessary instinct is placed in its brain by the Creator.

CHRISTIAN STANDARD
December 5, 1925.

DIFFERENT RACES

Since God created a man and a woman, Adam and Eve, and from them all human beings have descended, how is it that we find today such extraordinary physical distinctions between the different races?

The answer to this question is found, not in the Bible, but in God's other book, the book of nature. By studying nature men have developed the science of genetics, which explains differences between living beings with the same ancestry. The differences come from mutations, or changes within the genes in the germ cells of living things.

In the animal kingdom mutations, producing new physical characteristics, are well known. Examples are tailless cats and dogs, hairless cattle, dogs, cats, mice, and horses, albino (white) mice, rats, deer, birds, and other creatures. Apparently these were born white because of mutations. Human beings are just as subject to the mutation process as are animals or plants.

There is one limitation to the mutation process: it cannot produce completely new types of creatures. For years evolutionists have tried vainly to make the science of genetics and the discovery of mutations into an evolutionary ladder. Instead, this branch of science has demonstrated the truth of the Genesis declaration that reproduction proceeds "after his kind." Genesis 1:11, 12, 21, 24, 25. Mutations make superficial changes in appearance but do not develop new types of creatures. A mouse may be white, gray, or brown, but it is still a mouse. A dog may be huge like a great Dane, or tiny like a Chihuahua. It may be covered with shaggy hair, or hairless. It may be yellow, white, black, or spotted. It may have a long tail or none at all. It may have long, swift legs like a greyhound, or short, waddling legs like a dachshund. But it is still a dog, and its descendants can never be anything else. A man may be black, red, yellow, or white, but he is still a man.

Though the Bible is not a textbook on genetics, it is right up-to-the-minute on this matter. Genesis 30:29-43 tells about Jacob's cattle-breeding experiments. Jacob didn't understand what was happening, but Genesis 31:10 explains why most of the animals were born streaked and speckled. They were sired by streaked and speckled animals. This agrees perfectly with recent findings of genetics.

The Bible also says God "hath made of one blood all nations of men for to dwell on all the face of the earth." Acts 17:26. This is true. All human beings are of "one blood." Though

there are superficial differences in color, slant of eyes, curliness of hair, size, et cetera, all blood is similar enough, whether Jewish, Arab, Negro, Caucasian, Indian, or Oriental, so that it may be given in transfusions from one to another.

Further information on this subject will be found in *Evolution, Creation, and Science*, by Frank L. Marsh, Ph.D.,

R. H. U.

AGE OF THE EARTH

How old do you think this world is? How long have people lived on it?

C. F. D.

The year 4004 B.C., which we find for the creation in most editions of the King James Bible, is taken from the chronology of the Anglican archbishop James Ussher (1581-1656).

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Some small differences of reckoning have been pointed out by other chronologists, and it is possible that a few years should be added to or subtracted from the 3,398 years mentioned above; but these differences do not materially affect the conclusion that the human race had its beginning approximately 6,000 years ago.

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